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14. ABSTRACT This is the first book to describe the physical properties of quantum materials near critical points with long-range many-body quantum entanglement. Readers are introduced to the basic theory of quantum phases, their phase transitions, and their observable properties. This second edition begins with nine chapters, six of them new, suitable for an introductory course on quantum					
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Report Title

Quantum Phase Transitions

ABSTRACT

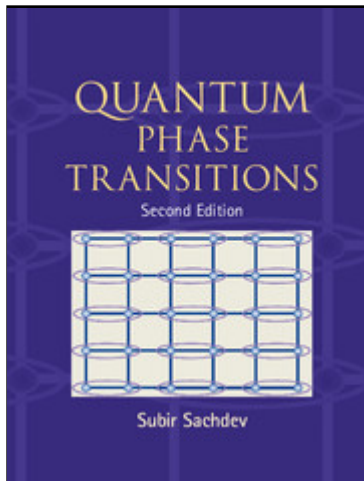
This is the first book to describe the physical properties of quantum materials near critical points with long-range many-body quantum entanglement. Readers are introduced to the basic theory of quantum phases, their phase transitions, and their observable properties.

This second edition begins with nine chapters, six of them new, suitable for an introductory course on quantum phase transitions, assuming no prior knowledge of quantum field theory. There are several new chapters covering important recent advances, such as the Fermi gas near unitarity, Dirac fermions, Fermi liquids and their phase transitions, quantum magnetism, and solvable models obtained from string theory. After introducing the basic theory, it moves on to a detailed description of the canonical quantum-critical phase diagram at non-zero temperatures. Finally, a variety of more complex models are explored. This book is ideal for graduate students and researchers in condensed matter physics and particle and string theory.

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**Quantum Phase Transitions**

2nd Edition

Subir Sachdev, Harvard University, Massachusetts

Hardback

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Describing the physical properties of quantum materials near critical points with long-range many-body quantum entanglement, this book introduces readers to the basic theory of quantum phases, their phase transitions and their observable properties. This second edition begins with a new section suitable for an introductory course on quantum phase transitions, assuming no prior knowledge of quantum field theory. It also contains several new chapters to cover important recent advances, such as the Fermi gas near unitarity, Dirac fermions, Fermi liquids and their phase transitions, quantum magnetism, and solvable models obtained from string theory. After introducing the basic theory, it moves on to a detailed description of the canonical quantum-critical phase diagram at non-zero temperatures. Finally, a variety of more complex models are explored. This book is ideal for graduate students and researchers in condensed matter physics and particle and string theory.

Reviews

Review of the first edition: 'Taken as a whole, this book is something of a theoretical masterpiece. With its tight organization, the book leads the determined (and theoretically inclined) reader on a tour encompassing some of the most challenging yet beautiful topics in contemporary theoretical physics ... Virtually every chapter contains a theoretical 'gem' ... The equations are manipulated with

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Physics Today

"With this very useful pedagogical supplement, I expect this second incarnation of Sachdev's volume to remain an indispensable reference and crucial tool for researchers in this field, and an invaluable resource for instructors preparing their advanced graduate courses related to this topic. Sachdev's revised and expanded textbook contains a wealth of information, both on quantum-critical phenomena and the mathematical tools needed to describe them theoretically, and will certainly remain a prominent if not the standard reference to the subject for both novices and experienced active researchers in the field."

Uwe C. Tauber, Mathematical Reviews

"The book is well written from a pedagogical point of view and hence suitable for non-specialists. On the other hand, it can be used (some chapters) by graduate students as well."

Farruh Mukhamedov (Kuantan)

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Features

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